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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/548,405

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Masatoshi Kuroda

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EXAMINER

CHANG, VICTOR S

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

02/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/548,405	<b>Applicant(s)</b> KURODA ET AL.	
	<b>Examiner</b> Victor S. Chang	<b>Art Unit</b> 1794	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Introduction***

1. Applicants' amendments and remarks filed on 1/15/08 have been entered. Claim 2 has been amended. Claims 1, 2 and 4 are active.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. In response to the amendments, the grounds of rejection have been updated as set forth below.

### ***Election/Restrictions***

4. Applicants' correction statement that "claims 1, 2, 3, and 4 are readable on the elected species." [Remarks page 5] has been considered, the examiner agrees to include claim 3 as elected species. Claims 1-4 are active.

### ***Information Disclosure Statement***

5. Applicants state that the copies of IDS submitted on September 8, 2005, January 17, 2007, and April 18, 2007 are not signed, and do not contain the Examiner's initials next to each reference. However, a review of PTO-1449s show that all the IDS forms have been initialed and signed electronically. Hand signatures are no longer required.

### ***Rejections Based on Prior Art***

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6. Claims 1, 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Honkanen [US 3099045].

Applicants admitted [0012-0023] that a Luneberg lens made of pre-expanded (foamed) beads of olefin resin and inorganic filler of a high dielectric constant, e.g., titanium dioxide, is known. However, the pre-expanded beads of composite material of prior art generally have non-uniform electrical properties due to difficulty in controlling high accuracy in expansion ratio of the mixture of olefin resin, inorganic filler and gas, and resulting in a non-uniform mixing of these composite components.

For claims 1 and 4, the admitted prior art is silent about: 1) the range of resin/filler volume ratio, 2) the foamed layer has a dielectric constant of 1.5 or more, and 3) the pre-expanded beads have been uniformly classified by certain selection standard. However, regarding 1) and 2), since applicants have admitted that a Luneberg lens made of pre-expanded (foamed) beads of olefin resin and inorganic filler of a high dielectric constant is known, workable ratio of olefin resin/filler, and the dielectric constant of foamed layer are deemed to be either anticipated by known art, or obviously provided by practicing the invention of prior art, dictated by the same utility as the claimed invention. Regarding 3), Honkanen's invention relates to molding pre-expanded thermoplastic beads into cellular structure [col. 1, ll. 10-14]. It is desirable to have beads of substantially uniform size, which can be accomplished by initially grading the pre-expanded beads according to size and using beads of a uniform size as the molding material. It would have been an obvious routine optimization to one of ordinary skill in the art to initially grade the pre-expanded beads prior to molding, as taught by Honkanen, motivated by the desire to obtain a Luneberg lens with an improved uniformity in the molded

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composite material. Finally, a workable grading standard is deemed to be an obvious routine optimization to one skilled in the art of Luneberg lens, in view of the benefits of pre-graded beads, taught by Honkanen, motivated by the desire to meet performance requirements. The combined teaching of prior art render all the feature of the claimed invention obvious.

For claims 2 and 3, the examiner takes Official notice that various titanate species, including barium titanate, strontium titanate, etc., are common and well known inorganic fillers having equivalent functionality of high dielectric constants to titanium dioxide. The selection of a known equivalent material based on its suitability for its intended use supported a *prima facie* obviousness determination. See MPEP § 2144.07.

### ***Response to Arguments***

7. Applicants argue at Remarks page 6 that

“the Office Action does not expressly discuss the claim 1 limitation "the pre-expanded beads that have been subjected to classification and selection such that  $f(A)$  satisfies the expression  $0.0005 \leq f(A) \leq 0.1$ , where  $f(A)$  is represented by the equation:  $f(A) = \sigma_a/A_{ave}$ ,  $\sigma_a$  is the deviation of a gas volume fraction  $A_r$  in the foamed dielectric layer, and  $A_{ave}$  is the average of the gas volume fractions  $A_r$ s at positions in the foamed dielectric layer."

However, while the admitted prior art is silent about the standard for bead grading, a workable grading standard is deemed to be an obvious routine optimization to one skilled in the art of Luneberg lens, in view of the benefits of pre-graded beads, taught by Honkanen, motivated by the desire to meet performance requirements. The combined teaching of prior art render all the feature of the claimed invention obvious.

Applicants argue at page 7 that

“Applicant's Admission does not teach or suggest the above recited limitation of claim 1.

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Further, Honkanen, at column 1, lines 41-45 merely states:

Furthermore, where it is desireable to have beads of substantially uniform size it can be accomplished by initially grading the pre-expanded beads according to size and using beads of a uniform size as the molding material.

Thus, Honkanen merely grades according to size, does not teach or suggest the above recited limitation of claim 1.”

However, applicants’ arguments directed to the admitted prior art and Honkanen individually are unpersuasive. Applicants are reminded that the grounds of rejection are the combined teachings of prior art, which render the claimed invention as an obvious routine optimization to one of ordinary skill in the art.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S. Chang whose telephone number is 571-272-1474. The examiner can normally be reached on 7:00 am - 5:00 pm, Tuesday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Victor S Chang/  
Primary Examiner, Art Unit 1794